REMARKS

Reconsideration is requested.

Claims 1-52, 54-56, 74-80, 91, 93-95 and 105-111 have been canceled, without prejudice. Claims 53, 57-73, 81-89, 92 and 96-104 are pending. The claims have been revised, without prejudice. Support for the revisions may be found throughout the specification. No new matter has been added.

To the extent not obviated by the above amendments, the Section 103 rejection of claims 53-92 and 96-104 over Tamime (1985, Yoghurt; Science and Technology (R1)), Yamaguchi (EP 0 868 854 (R2)) and Takahashi (EP 1 206 909 (R3)), is traversed. Reconsideration and withdrawal of the rejection are requested in view of the above and the following distinguishing comments.

The present invention provides a stabilizer for use in the preparation of fermented dairy products which is compatible with the fermentation step, which prevents phase separation during fermentation and which is capable of stabilizing acidified milk proteins after fermentation. See page 5, lines 28-32 of the specification.

Surprisingly, and contrary to the general teachings of the art, the applicants have discovered that depolymerized pectins are suitable stabilizers for this purpose and lead to surprising and unexpected improvements in the physical properties of the resulting fermented dairy products.

There is no teaching or suggestion in the cited art that would have motivated one of ordinary skill to have added a depolymerized pectin stabilizer to a dairy product prior to fermentation. One of ordinary skill would appreciate that pectins are incompatible with

processes involving a fermentation step due to their ability to induce undesirable phase separation. See page 10, lines 19 to 22 of the specification.

Therefore, traditionally it has been necessary to add pectin stabilizers after fermentation in order to achieve the desired stabilization of the food product.

The ordinarily skilled person would understand that during fermentation, the pH of the milk is reduced gradually and slowly, leading to a disintegration of the casein molecules that thickens or gels the milk into yogurt. The addition of pectins prior to fermentation induces phase separation, which in this case is undesirable as it adversely affects the characteristic yogurt structure. Moreover, mechanical stirring is typically avoided during fermentation in order to optimize conditions for the bacteria. Finally, in contrast to directly acidified beverages, the pH drops too slowly during fermentation to freeze the casein structures and prevent aggregation.

The ordinarily skilled person would therefore appreciate that pectins are ineffective if added to milk prior to fermentation. Instead, the ordinarily skilled person would appreciate that pectins are typically added after fermentation to protect acidified proteins against aggregation. Again, this was well established in the prior art and is described, for example, on page 4, lines 4-22 of the specification.

Thus, on reading Tamine and imparted with a common general knowledge of the field of pectins, the ordinarily skilled person would understand that:

(i) Low methoxy pectin is one example (of many) of a modified gum that may be used as a stabilizer during the manufacture of yogurt;

(ii) Stabilizers in general can be incorporated into yogurt prior to the fermentation step;

(iii) Pectin stabilizers (LE and HE), however, are incompatible with the fermentation step in view of their ability to cause undesirable phase separation. Pectin stabilizers must therefore be added after fermentation.

The applicants submit that the ordinarily skilled person, based on their common general knowledge and the cited art, would not have considered adding pectin as a stabilizer prior to the fermentation step with any reasonable expectation of success.

The process of claim 1 further requires that the stabilizer is present in an amount of 0.3 to 3.0 weight %. Surprisingly, the addition of at least 0.3 weight % of the stabilizer leads to a marked improvement in viscosity compared to 0.15 weight % SY200 (corresponding to the maximal acceptable level of full length GRINSTEDB pectin SY200). This is shown in Example 3 on page 41 of the application (see objectives set forth at lines 3 to 10).

Example 3 investigates the addition of various dosages of depolymerized pectins to stirred yoghurt, compared with full length pectin SY200. The results in the table on page 43 show that yoghurt samples containing depolymerized pectins according to the invention exhibit comparable syneresis, sandiness and smoothness to the reference sample of 0.15 % SY200.

More significantly, samples containing 0.3 weight % and above of depolymerized pectins exhibit increased viscosity, enhanced sensory thickness and creamy perception. For example, samples containing depolymerized pectins at dosages of 0.3 % and above

exhibit significantly higher Brookfield viscosities (cP) compared to 0.15 % SY200 (see page 44, lines 9 to 12 and table on page 43). Moreover, contrary to traditional, commercial high molecular weight pectin types like GRINSTEDB pectin SY200, high dosages of depolymerized pectin can be dry-blended, dispersed and hydrated with milk powder prior to pasteurization, inoculation and fermentation for the production of stirred yoghurt. This is possible without creating the grittiness that usually happens with standard pectin products like SY200 dosed at 0.15 to 0.2 % (page 44, lines 27 to 29).

In the light of this data, one of ordinary skill in the art will appreciate that the presently claimed invention has an effect that is qualitatively superior to that of the cited art (i.e. compared to full length pectins similar to those disclosed in Tamine).

The applicant submits that it would not have been obvious for the ordinarily skilled person to have incorporated 0.3 to 3.0 weight % of a depolymerized pectin (such as those disclosed in Yamaguchi or Takahashi) prior to the fermentation of a dairy product. Even if the ordinarily skilled person were to have considered making such a substitution - which is not to have been expected – the ordinarily skilled person would have had no reasonable expectation that incorporating depolymerized pectins in the specific amount presently claimed would have led to dairy products having such surprisingly superior viscosity and sensory thickness characteristics, as demonstrated in, for example, Example 3 of the application. Nor would one of ordinary skill in the art have had any reasonable expectation that such products would be free from the grittiness usually associated with full length standard pectin products.

Takahashi discloses acidic protein foods containing "low molecularized" pectin and processes for the production of such acidic protein foods (page 2, lines 48 to 56). The low molecularized pectin may be obtained by any known chemical or physical treatment capable of lowering the degree of polymerization of the pectin (see page 3, lines 1 to 2). The examples of Takahashi disclose the addition of low molecularized pectin to a milk containing composition (see, for example, Tables 1 and 4). However, Takahashi does not disclose a process in which depolymerized pectin is added as a stabilizer to a food material comprising a milk protein prior to fermentation and pasteurization. While lactic acid bacterial beverages and fermented milk are given as examples of the acidic protein foods of Takahashi (page 4, lines 10 to 11), no examples are provided which teach the fermentation step. In contrast, the examples only teach the addition of low molecularized pectin to milk.

The ordinarily skilled person would understand from Takahashi that the low molecularized pectin is added to the final food product, rather than being incorporated at an earlier stage during its manufacture. Where the acidic protein food is a lactic acid bacterial beverage or fermented milk, the ordinarily skilled person would understand that the low molecularized pectin is added after the fermentation step; there is no teaching or suggestion that it could be added before fermentation, or before pasteurization.

Accordingly, on reading Takahashi (either alone or in combination with Tamine), the ordinarily skilled person would not have found any motivation to have added the depolymerized pectin stabilizer disclosed therein to a dairy product prior to fermentation

and pasteurization steps. If anything, the ordinarily skilled person would have expected the depolymerized pectin stabilizer of Takahashi to behave in a similar manner to full length pectins, i.e., to be incompatible with the fermentation step due to undesirable phase separation.

The ordinarily skilled person would have had no reasonable expectation that the depolymerized pectin of Takahashi would in fact have the opposite effect, i.e. that it would have a stabilizing effect and could be added prior to fermentation without giving rise to phase separation. In other words, there is nothing in Takahashi to suggest that depolymerized pectins would overcome the technical prejudice in the art that pectins are incompatible with fermentation.

Moreover, there is no teaching in Takahashi that the depolymerized pectins disclosed therein would be suitable for use in combination with an inoculation and a pasteurization step, let alone any suggestion that using the depolymerized pectins in an amount of from 0.3 to 3 wt % would give rise to dairy products free from the grittiness and having such surprisingly superior viscosity and sensory thickness characteristics.

In the light of the above, as well as the previously submitted remarks, the applicants submit that the claimed invention would not have been obvious in view of the cited art.

Yamaguchi discloses a low molecular weight pectin that has a high solubility and a low viscosity (page 2, lines 25 to 27). However, there is no teaching or suggestion in Yamaguchi that would have motivated the ordinarily skilled person to have incorporated the low molecular weight pectin disclosed therein as a stabilizer in fermented dairy

products. Instead, the teachings of Yamaguchi are limited to using the low molecular weight pectin in other food products such as apple juice, hard candy or bread.

The ordinarily skilled person would therefore not have looked to Yamaguchi to provide a stabilizer compatible with fermented dairy products. There is nothing in Yamaguchi to have suggested that depolymerized pectins would overcome the technical prejudice in the art that pectins are incompatible with fermentation.

Moreover, there is no teaching or suggestion in Yamaguchi that the depolymerized pectins disclosed therein would be suitable for use in combination with a pasteurization and an inoculation step, let alone any suggestion that using the depolymerized pectins in an amount of from 0.3 to 3 wt % would give rise to dairy products free from the grittiness and having such surprisingly superior viscosity and sensory thickness characteristics.

In view of the above as well as the remarks of record, the applicants submit that the claimed invention would not have been obvious over the cited combination of art. Withdrawal of the Section 103 rejection is requested.

The claims are submitted to be in condition for allowance and a Notice to that effect is requested. The Examiner is requested to contact the undersigned, preferably by telephone, in the event anything further is required.

Respectfully submitted,

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